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on April 5, 2004

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04/05/04  
Date of  
Signature

**PATENT**  
#03-0387-UNI  
Case #J3702(C)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Lee et al.  
Serial No.: 10/733,185  
Filed: December 11, 2003  
For: COSMETIC METHOD AND COMPOSITION FOR ENHANCING  
ATTRACTIVENESS

Edgewater, New Jersey 07020  
April 5, 2004

**SUBMISSION OF PRIORITY DOCUMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

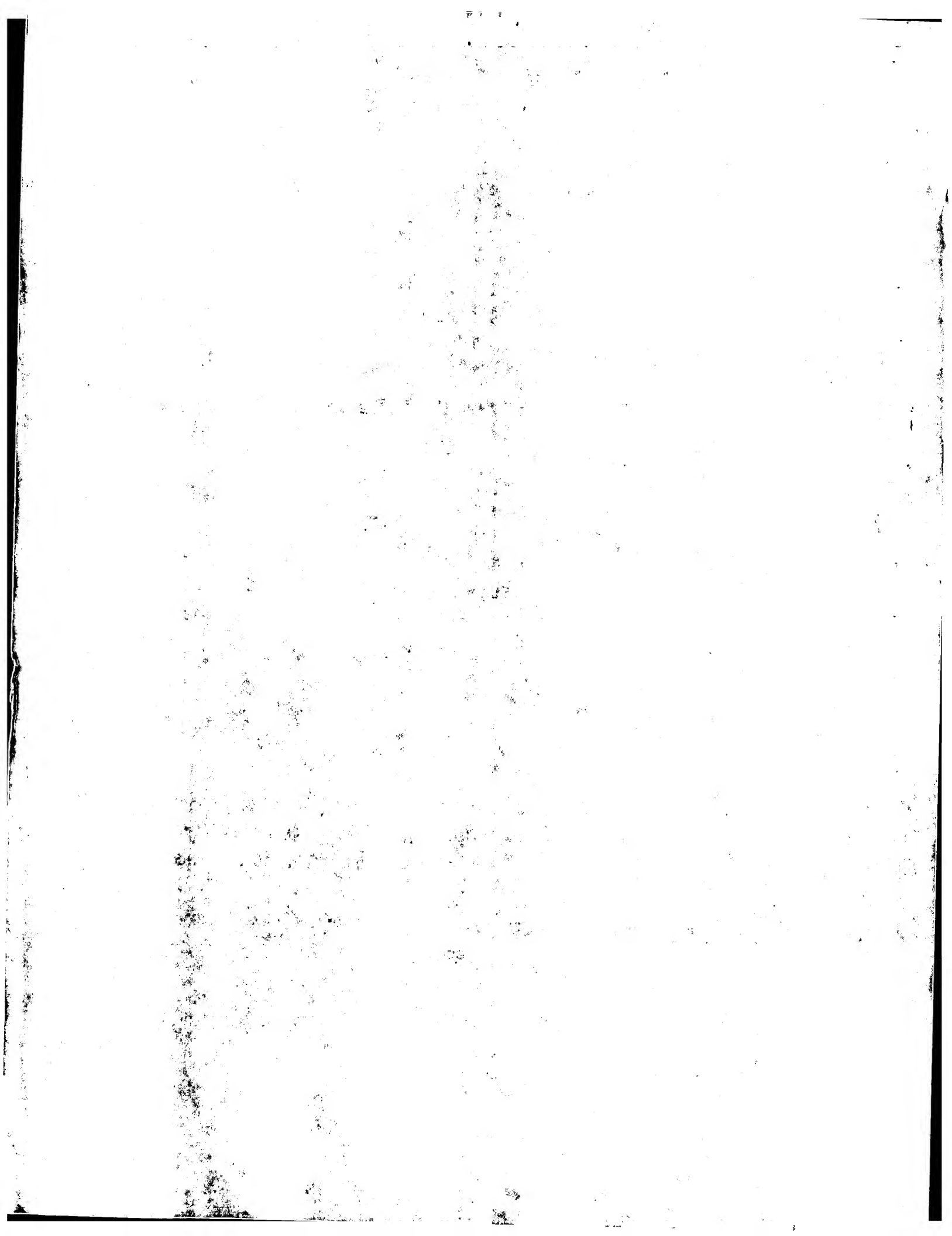
Pursuant to rule 55(b) of the Rules of Practice in Patent Cases, Applicant(s) is/are submitting herewith a certified copy of the United Kingdom Application No. 0229071.6 filed December 13, 2002, upon which the claim for priority under 35 U.S.C. § 119 was made in the United States.

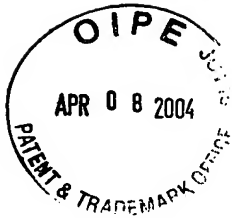
It is respectfully requested that the priority document be made part of the file history.

Respectfully submitted,

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INVESTOR IN PEOPLE

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Dated 18 November 2003

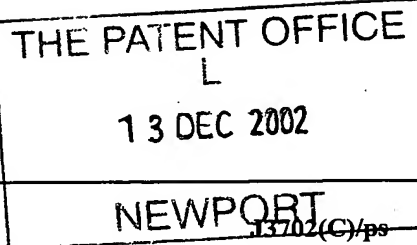


The  
Patent  
Office

13DEC02 E770767-6 002898  
POL/7700 0.00-0229071.6

**Request for grant of a patent**

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)



The Patent Office

Cardiff Road  
Newport  
Gwent NP10 8QQ

1. Your reference

2. Patent application number  
(The Patent Office will fill in this part)

3. Full name, address and postcode of the or of each applicant (underline all surnames)

UNILEVER PLC  
UNILEVER HOUSE, BLACKFRIARS  
LONDON, EC4P 4BQ

Patents ADP number (*if you know it*)

~~50426956002~~

1628002

If the applicant is a corporate body, give the country/state of its incorporation

UNITED KINGDOM

4. Title of the invention

COSMETIC METHOD AND COMPOSITION FOR  
ENHANCING ATTRACTIVENESS

5. Name of your agent (*if you have one*)

PEARCE, Tim

"Address for Service" in the United Kingdom to which all correspondence should be sent (*including the postcode*)

PATENT DEPARTMENT, UNILEVER PLC  
COLWORTH HOUSE, SHARNBROOK  
BEDFORD, MK44 1LQ

Patents ADP number (*if you know it*)

7171622001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (*if you know it*) the or each application number

Country	Priority application number ( <i>if you know it</i> )	Date of filing (day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing (day/month/year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (*Answer 'Yes' if:*  
a) *any applicant named in part 3 is not an inventor, or*  
b) *there is an inventor who is not named as an applicant, or*  
c) *any named applicant is a corporate body.*  
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YES

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Continuation sheets of this form

Description	30
Claim(s)	6 <i>SM</i>
Abstract	1
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### Priority Documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

Request for preliminary examination and search (*Patents Form 9/77*)

1 ✓

Request for substantive examination (*Patents Form 10/77*)

Any other documents  
(please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature(s)



Date: 12/12/02

Sandra Jane EDWARDS, Authorised Signatory

12. Name and daytime telephone number of person to contact in the United Kingdom
- Petra Silverstone, Tel 01234 222893

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DUPLICATE

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Cosmetic Method and Composition for enhancing Attractiveness

The present invention relates to a cosmetic method and  
5 compositions for enhancing attractiveness, and in particular  
to antiperspirant formulations and to cosmetic methods of  
controlling perspiration from localised areas of the body,  
such as from the underarm in conjunction with a method for  
localised hair removal.

10

For many years, humans have employed cosmetic methods to  
prevent or at least ameliorate bodily functions which  
society at the time under consideration considers to be  
unsightly or otherwise undesirable. These methods have  
15 included controlling the appearance of sweat by topical  
application of an active which prevents egress of sweat from  
the eccrine glands, especially in the underarm and also  
shaving or the use of depilators to remove hair. In the  
underarm, the first method is commonly employed by both  
20 genders, and the second method commonly, though not  
exclusively, by ladies. Hair removal from the underarm is  
considered by many ladies in many countries to enhance their  
appearance, but conventional methods, such as shaving or the  
use of depilators, irritate the skin and can result in a  
25 reduction in skin elasticity and/or a reduction in the  
moisture content of the stratum corneum. Moreover,  
conventional antiperspirants can exacerbate irritation,  
especially if applied to skin from which hair has been  
removed recently. The application of antiperspirant  
30 formulations to skin which had been shaved shortly before  
can sometimes sting or otherwise be unpleasant for the user.

Moreover, the application of antiperspirant can exacerbate the skin damage caused by hair removal. The can manifest itself in the form of irritation and redness and also on sting when a material such as an antiperspirant composition is applied. Accordingly, beauty and acceptable suppression of odour generation can be achieved at the expense of some pain or at least discomfort to the user.

It is accordingly an object of the present invention to identify antiperspirant formulations which can assist skin to recover better or faster after hair removal or at least ameliorate any pain or discomfort from the beauty and odour treatment regime, or to reduce the impact of subsequent hair removal, whilst simultaneously still controlling or preventing the appearance of sweat and/or generation of odour.

#### Brief summary of the present invention

According to one aspect of the present invention, there is provided an antiperspirant or deodorant composition suitable for topical application to skin and providing a skin-care benefit which comprises:-

- a) an antiperspirant active in an amount of from 1 to 50 by weight,
- b) a natural oil that comprises a glyceride of an unsaturated carboxylic acid containing 18 carbon atoms
- c) glycerol



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constituents b) and c) being selected in a weight ratio of from 2:1 to 1:4 and together constituting 1.5 to 15% by weight of the composition and

d) a carrier fluid for the antiperspirant active other than  
5 constituents b) and c) or a low molecular weight  
aliphatic monohydric alcohol in an amount of from 30 to  
93% by weight.

10 By the employment of the glyceride oil in conjunction with  
glycerol in low amounts and in such a ratio range, it is  
possible to accelerate the recovery of human skin from the  
unwanted, deleterious side-effects of hair removal or to  
condition the skin to resist such side effects, whilst at  
the same time retaining the benefit of controlling sweating.

15

In a second aspect of the present invention, there is  
provided a cosmetic method for aiding the recovery of human  
skin from side effects of hair removal whilst controlling  
perspiration or conditioning the skin to ameliorate such  
20 side effect comprising applying topically to the skin a  
composition comprising:-

a) an antiperspirant active in an amount of from 1 to 50% by  
weight,

b) a natural oil that comprises a glyceride of an  
25 unsaturated carboxylic acid containing 18 carbon atoms  
c) glycerol

constituents c) and d) being selected in a weight ratio of  
from 2:1 to 1:4 and together constituting 1.5 to 15% by  
weight of the composition and

30 d) a carrier fluid for the antiperspirant active other than  
constituents b) and c) or a low molecular weight

aliphatic monohydric alcohol in an amount of from 30 to 93% by weight before and/or after hair removal from the skin.

5

Detailed Description of the invention and preferred Embodiments

10 The present invention relates to antiperspirant or deodorant compositions that are suitable for use in conjunction with hair removal from the same area of skin and to cosmetic methods involving both hair removal and perspiration control employed such antiperspirant compositions.

15 The antiperspirant active employed herein comprises an astringent aluminium or zirconium salt. The proportion of antiperspirant active present in the composition according to the invention may be from 1-40% by weight of the composition, preferably at least 5% by weight and more  
20 preferably 15-30% by weight of a composition not intended for mixture with a propellant, or 15 to 50% in a base composition intended for mixture with a propellant that may be employed in order to make an aerosol composition.

25 Examples of suitable actives include aluminium salts, zirconium salts, aluminium and/or zirconium complexes, for example aluminium halides, aluminium hydroxy halides, zirconyl oxyhalides, zirconyl hydroxyhalides, and mixtures thereof. However, it is desirable to employ basic aluminium  
30 and/or zirconium salts, as such or complexed, suitable complexants including aminoacids, including particularly

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glycine, and especially salts in which the halide is chloride. Specific examples of preferred salts include activated aluminium chlorohydrate, aluminium chlorohydrate, aluminium pentachlorohydrate and aluminium zirconium chlorohydrate. Useful zirconium salts include zirconium hydroxy-chloride and zirconium oxychloride. Various generally used actives will be known to those skilled in the art. Preferred antiperspirant actives include ZAG (Zirconium Aluminium Glycine), AAZG (Activated Aluminium Zirconium Glycine), and AACH (Activated Aluminium Chlorohydrate) activation for example as described in EP6739. In practice, the choice of antiperspirant employed will also take into local regulations, so that in many countries, aerosol formulations employ aluminium salts.

The antiperspirant active can be present in particulate form whereupon it is normally suspended in a suitable carrier fluid, that is to say a carrier fluid in which it is substantially insoluble, which carrier is usually water-immiscible, and which can be structured or thickened. The particle size of the antiperspirant salt is at the discretion of the producer of the composition, though in practice, it will normally comprise particles that are mainly in the diameter range of from 0.1 to 100µM, and in many instances providing a weight average particle diameter of from 10 to 60µM. The particle size and distribution will commonly also take into account the applicator in accordance with principles known to the skilled person.

Alternatively the antiperspirant active can be dissolved in a polar carrier, such as for example in aqueous solution or

in a polar low weight dihydric alcohol such as propylene glycol and/or dipropylene glycol, advantageously at a concentration of 30 to 60% by weight in such a carrier.

- 5 In some embodiments, the antiperspirant active described above is incorporated at a concentration such as from 0.1 to 5% by weight which imparts deodorancy without always meeting national minimum standards for antiperspirancy.
- 10 The compositions according to the present invention can also comprise 0.01 to 5% of a deodorant active in addition to any antiperspirant active. The deodorant active used in the cosmetics of the invention can be any deodorant active known in the art such as antimicrobial actives such as
- 15 polyhexamethylene biguanides eg those available under the trade name Cosmocil™ or chlorinated aromatics, eg triclosan available under the trade name Irgasan™, non-microbiocidal deodorant actives such as triethylcitrate, bactericides and bacteriostatis. Yet other deodorant actives can include
- 20 zinc salts such as zinc ricinoleate.

The natural oil which is employed herein comprises one or more unsaturated C18 fatty acid glycerides. In many instances, one or more triglycerides are present. The fatty

25 acid residues in the oils can comprise, commonly, from one to three olefinic unsaturated bonds and often one or two. Whilst in many instances the olefinic bonds adopt the trans configuration, in a number of desirable products the bond or bonds adopt the cis configuration. If two or three olefinic

30 unsaturated bonds are present, they can be conjugated. The fatty acid can also be substituted by an hydroxyl group.

The natural oils employable herein desirably comprise one or more triglycerides of oleic acid, linoleic acid, linolenic acid or ricinoleic acid. Various isomers of such acids often have common names, including linolenelaidic acid, trans 7-octadecenoic acid, parinaric acid, pinolenic acid, punicic acid, petroselenic acid and stearidonic acid. It is especially desirable to employ glycerides derived from oleic acid, linoleic acid or petroselenic acid, or a mixture containing one or more of them.

10

Natural oils containing one or more of such triglycerides include coriander seed oil for derivatives of petroselinic acid, impatiens balsamina seed oil, parinarium laurinarium kernel fat or sabastiana brasiliensis seed oil for

15 derivatives of cis-parinaric acid, dehydrated castor seed oil, for derivatives of conjugated linoleic acids, borage seed oil and evening primrose oil for derivatives of linoleic and linolenic acids, aquilegia vulgaris oil for columbinic acid and sunflower oil or safflower oil for

20 derivatives of oleic acid, often together with linoleic acids. Other suitable oils are obtainable from hemp, which can be processed to derive stearadonic acid derivatives and maize corn oil. An especially convenient natural oil by virtue of its characteristics and availability comprises  
25 sunflower oil, ranging from those rich in oleic acid glycerides to those rich in linoleic acid glycerides, rich indicating that its content is higher than that of the other named acid.

The proportion of the natural oil in the composition is often selected in the range of from 0.3 to 10% by weight, and especially in the range of from 0.5 to 6% by weight. A third essential constituent of the composition comprises  
5 glycerol. This is often present at a concentration of from 0.5 to 10% by weight of the composition, and particularly from 0.5 to 6% by weight. Although the glycerol may be incorporated as a liquid into the composition, at least a fraction of it may alternatively be incorporated as a pre-  
10 mixture with the antiperspirant active particles or an alternative receptive particulate material, in effect absorbed or adsorbed within or on the surface of such particles. The weight ratio of the glycerol to suspended antiperspirant active is often in the range of from 1:8 to  
15 1:25. The weight ratio of the glycerol to dissolved antiperspirant active is often in the range of from 1:4 to 1:10.

The combined proportion of the oil and the glycerol in the  
20 composition (or base composition for an aerosol) is often chosen in the range of at least 2%, and in many instances is not greater than 8%. It will naturally be recognised that the beneficial effects from the combination tend to be greater or faster observed when a larger rather than a  
25 smaller proportion of the two materials is present.

The weight ratio of the oil to the glycerol is often selected in the range of at least 1:1 and in many embodiments is not greater than 2:1. The carrier liquids to  
30 employ depend on the nature of the eventual antiperspirant of deodorant composition which it is desired to make. The

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formulations can be anhydrous or aqueous, and in the form of a solution, an emulsion or a suspension, as desired.

The total proportion of carrier materials in the instant invention compositions includes both constituents b) and c). The balance of the carrier materials is provided by one or more other liquid materials. Such other carrier liquids can comprise water and/or dihydric alcohols and/or one or more water-immiscible carrier liquids. Where water is employed to provide at least a fraction of the carrier liquid, the formulation will normally comprise an emulsion, which in many instances is an oil in water emulsion. The carrier material can comprise one or more of volatile carrier fluids and/or one or more of non-volatile fluids. The carrier material, or in the case of an emulsion the continuous phase thereof can be structured or thickened by one or a combination of thickener and/or structurant materials if desired that is suitable for the nature of the carrier material. The carrier materials together can often comprise up to about 90 wt%, in many instances up to 70 wt% of the composition, or of the base composition, if mixed subsequently with a propellant. Where the composition comprises both hydrophylic and hydrophobic phases, the weight ratio of the two phases is often in the range of 10:1 to 1:10. Aerosol compositions according to the present invention can conveniently be obtained by introducing a base formulation as described herein that is free from propellant and at least 0.7 times and often 1.5 to 20 times its weight of propellant into a suitable aerosol dispenser.

Suitable water-miscible carrier fluids include dihydric alcohols, commonly containing up to 6 carbons, such as propylene glycol, or hexane diol, and/or oligomers of propylene glycol such as dipropylene glycol.

5 Suitable water-immiscible carriers include volatile and/or non-volatile silicone liquids, volatile and/or non-volatile hydrocarbon liquids, liquid fatty alcohols, liquid esters of fatty alcohols, and liquid ether terminated polyalkylene glycols. Herein liquid indicates that the material has a  
10 melting point of not higher than 20°C. Preferably, carrier materials herein have a boiling point of at least 75°C and particularly in the range of up to 150°C.

Volatile silicones are usually selected from cyclic  
15 polysiloxanes containing from 3 to 8 dialkylsiloxane groups, (cyclomethicones) especially dimethylsiloxane groups and particularly 4 and/or 5 dimethylsiloxane groups (tetra- and penta-cyclomethicones). Other useful volatile silicones can  
20 comprise linear polysiloxanes, usually containing up to 8 and preferably 4 or 5 dialkylsiloxane groups, including terminal groups, commonly called dimethicones when both alkyl substituents are methyl. Low molecular weight liquid hydrocarbons that are volatile can comprise paraffin oils, often isoparaffin oils.

25

Non-volatile silicone oils usually comprise linear alkylarylpolysiloxanes containing up to 4 or 5 siloxane silicon atoms, such as methylphenylsiloxanes often in which there is from 0.5 to 1.2 phenyl substituent per methyl  
30 substituent, as for example in DC704™ available from Dow Corning, Inc. Other non-volatile silicones comprise



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intermediate and higher molecular weight linear dimethicones that are liquid at 20°C, such as members of the DC200™ series of silicone oils having a viscosity of at least 1 mPa.s, available from Dow Corning, Inc. Non-volatile hydrocarbon oils, which often contain on average between 20 and 40 carbon atoms, include mineral oil and hydrogenated polydecene.

In anhydrous formulations, a significant proportion of the water-immiscible carrier materials can be selected from non-volatile materials such as DC704 and the non-volatile hydrocarbons, at the discretion of the producer, with the intention of reducing the visibility of deposits on topical application of the formulation.

Liquid fatty alcohols are normally branched chain alcohols containing from 12 to 25 carbons and several such desirable alcohols contain from 16 to 20 carbons, including isostearyl alcohol and octyl-decylalcohol.

At the discretion of the producer of the formulation, the respective phases of the composition, be they dispersed particulates in an anhydrous composition, or aqueous and water-immiscible phases, can be refractive indexed matched by selection of the proportions of mixtures of carrier materials and/or treatment of antiperspirant active ingredients, in accordance with published techniques with the intention producing clear or translucent formulations.

Liquid fatty alcohol esters include fatty alcohol esters of naphthoic or especially benzoic acid. In such esters the

fatty alcohol is often linear, and in many instances contains from 12 to 20 carbon atoms, such as C<sub>12</sub>-C<sub>15</sub>, or a mixture of chain lengths.

- 5 Liquid polyallyleneglycol ethers commonly comprise a polypropyleneglycol polyglycol/polypropylene glycol moiety of from 5 to 20 units terminating in an alkyl ether of from 2 to 6 carbons, such as butyl or t-butyl. A suitable example is obtainable under the CTFA INCI approved name of
- 10 PPG-14-butyl ether.

In embodiments in which the composition is in the form of an emulsion, it usually contains from 0.1 to 8% by weight of an emulsifier, and in many embodiments from 0.5 to 5%.

- 15 Materials that are suitable as emulsifiers commonly have an HLB value in the region of from 2 to 10 and often in the region of 3 to 8. In a mixture of emulsifiers, all may have an HLB value in the aforementioned regions or one or more may have a higher HLB value, such as from 10 to 16, provided
- 20 that the weight averaged HLB value is up to 10 or particularly up to 8. Classes of emulsifiers commonly comprise nonionic surfactants having such an HLB value, including polyalkylene oxide esters or ethers, such as polyethylene oxide (POE) and/or poly propylene oxide (POP)
- 25 esters or ethers optionally containing a glyceryl unit and/or fatty ester or ether derivatives of a polyhydroxyaliphatic or cycloaliphatic group containing from 3 to 6 carbons, such as glycerol or sorbitol. The number of POE and/or POP units in nonionic surfactant emulsifiers is
- 30 commonly between 2 and 100 and particularly on weight

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average between 3 and 25 units and in many instances on average between 4 and 10.

In many non-ionic surfactants desirable as emulsifiers herein, the hydrophobic component therein is usually provided by the alkyl residue of a fatty alcohol or acid, in many instances containing from 12 to 30 carbons, and in particular one or more palmityl, cetyl stearyl and/or eicosonyl or behenyl groups. Of these, stearyl and a mixture of stearyl and cetyl are especially favoured. Another suitable class of emulsifiers, particular interesting when the formulation comprises a significant fraction of a silicone oil, comprises alkyl dimethicone copolymers, namely polyoxyalkylene modified dimethylpolysiloxanes. The polyoxyalkylene group is often a POE or POP or a copolymer of POE and POP. The copolymers often terminate in C<sub>1</sub> to C<sub>22</sub> alkyl groups, particularly C<sub>12</sub> to C<sub>18</sub>. Suitable example comprises cetyl dimethicone copolymers available as Abil EM90™ or EM97™ from Th.Goldschmidt.

20

The carrier materials described herein can be thickened, gelled or solidified (structured) employing thickeners, gellants or structurants known to a skilled man in the art for the respective class of carrier materials, and in the amounts needed to achieve the extent of thickening, gelling or structuring desired by the producer. The amount of such thickener, gellant or thickener is usually selected within the range of from 0.1 to 30% by weight of the composition, depending on the nature of the final formulation which the producer wishes to make. Such formulations can comprise liquids of low viscosity, such as from 500 to 5000 mPa.s,

30

which can be employed in roll on or pump-spray or squeeze-spray dispensers. Other thickened or gelled compositions comprise creams or soft solids, which typically have a hardness of from 0.003 to 0.5 N/mm<sup>2</sup>, as measured by sphere indentation and frequently, from 0.005 up to 0.1 N/mm<sup>2</sup>. which compositions flow when subjected to mild pressure (1 to 5 psig) and are commonly dispensed through an apertured dome. Yet other compositions are in the form of sticks which retain their physical integrity and shape when subjected to similar low pressure, usually have a hardness of greater than 0.5 N/mm<sup>2</sup>, as measured by sphere indentation and are commonly dispensed through the open end of a barrel container.

There are broadly speaking two classes of carrier materials that are employed herein, water and dihydric alcohol in one class and water-immiscible liquids forming a second. The first class can be thickened by water-soluble or dispersible materials of higher viscosity, including various of the emulsifiers, and/or thickened or gelled with water-soluble or water-dispersible polymers including polyacrylates, and water-soluble or dispersible natural polymers, such as water-soluble polysaccharide or starch derivatives, such as alginates, caragheen, agarose and water-dispersible polymers include cellulose derivatives. An aqueous phase can also be thickened in accordance with known technology using a dispersion of a water-insoluble particulate material, such a finely divided clay, possibly in conjunction with an electrolyte or polyelectrolyte including a water-soluble emulsifier.

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Dihydric alcohols, optionally containing ether links such as those described above also can be gelled using dibenzylidene alditols, such as for example dibenzylidene sorbitol.

5 Water-immiscible carrier fluids, such as those described hereinabove, can be thickened or structured using a wide range of thickeners, gellants and structurants that are known to the skilled producer. Thickeners for such carrier liquids include particulate inorganic substances which are  
10 sometimes alternatively referred to as suspending agents particularly if the eventual use of the formulation is in an aerosol, such as clays or finely divided silica. Such thickeners are well suited to increasing the viscosity for liquids, but can also produce semi-solids (soft solids)  
15 provided that sufficient thickener is employed.

Other materials which can act as thickeners for water-immiscible liquids, but many of which can also act as gellants or structurants by increasing their concentration  
20 in the liquid, can comprise organic polymers which are soluble in the carrier liquid(s), though commonly at elevated temperature of above 60°C. Such polymers are particularly well suited to producing compositions in the form of soft or firm solids.

25

Such polymers can be selected from polysaccharides esterified with a fatty acid of which one excellent example comprises dextrin palmitate: polyamides as discussed in US 5500209, such as the product available under the trade name  
30 Versamid 950™ that is derived from hexamethylene diamine and adipic acid; alkylene/arylene block copolymers, for example

styrene and ethylene, propylene and/or butylene block copolymers eg SEBS block copolymers, many of which are available under the trade name Kraton™; alkyl substituted galactomannan such as N-HANCE™; co-polymers of vinyl pyrrolidone with polyethylene containing at least 25 methylene units. The concentration of such polymers in the water-immiscible liquid is often selected in the range of from 1 to 20%, depending on the extent of thickening or structuring required, and the effectiveness of the chosen polymer in the liquid/mixture.

One class of structurant which is desirable by virtue of its long standing proven capability to produce firm solids and more recently in making soft solids, comprises waxes. Herein, the term wax is employed to encompass not only materials of natural origin that are solid with a waxy feel and water-insoluble at 30-40°C, but melt at a somewhat higher temperature, typically between 50 and 95°C, such as beeswax, candelilla or carnauba wax, but also materials having similar properties. Such other waxes include hydrocarbon waxes, eg paraffin wax, mineral wax and microcrystalline wax; synthetic waxes, such as polyethylene of 2000 to 10000 daltons; waxy derivatives or waxy components of natural waxes, such as ester components, either extracted or synthesised, solid ester derivatives of glyceryl or glycol, typically with linear saturated fatty acids, usually containing a significant fraction of C<sub>16-22</sub> acid residues, which may be synthesised or obtained by hydrogenating the corresponding natural oil; petroleum waxes, waxy silicone polymers containing alkyl substituents of at least C<sub>10</sub> chain length; and, importantly, waxy fatty alcohols, that normally

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are linear and often contain from 14 to 24 carbons, such as stearyl alcohol, cetyl alcohol and/or behenyl alcohol.

Further classes of structurants for water-immiscible liquids  
5 that are employable herein, in accordance with their disclosure in patent literature relating to the preparation of antiperspirant formulations in soft solid or firm stick form include oil-soluble polyamides or amide/silicone copolymers, hydroxystearic acid, such as 12-hydroxystearic  
10 acid, or ester or amide derivatives thereof, N-acyl amino acid amides and esters described in US-A-3969087, such as, in particular, N-Lauroyl-L-glutamic acid di-n-butylamide; amide derivatives as set forth in WO 98/27954 notably alkyl N,N'dialkyl succinamides; threitol or like amido gellants as  
15 set forth in US-A-6410001; lanosterol, as set forth in US-A-6251377; amido derivatives of cyclohexane as set forth in US-A-6410003; a combination of a sterol and a sterol ester as set forth in WO 00/61096, eg  $\gamma$ -oryzanol and  $\beta$ -sitosterol; and fatty acid esters of cellobiose, such as in particular a  
20 product containing predominantly cellobiose octanonanoate and a minor fraction of cellobiose heptanonanoate.

Mixtures of materials within each class of gellant/  
structurant can be employed, as can mixtures of materials  
25 from two or each of the classes.

If the invention composition comprises an aerosol composition, it contains a propellant in addition to a base composition as described herein above, commonly in a weight  
30 ratio of from 95:5 to 40:60, and in many formulations, the weight ratio is from 90:10 to 50:50. The propellant is

conveniently a low boiling point material, typically boiling below  $-5^{\circ}\text{C}$ , for example an alkane such as propane, butane or isobutane, and possibly containing a fraction of pentane or isopentane, or a hydrofluorocarbon or fluorocarbon of similar carbon content. During filling of the aerosol canister, the propellant gas is liquified by virtue of the elevated pressure that is generated therein.

The invention compositions herein can comprise one or more optional constituents which have hitherto been incorporated or proposed for incorporation in antiperspirant compositions. Such optional constituents may be liquid or solid, and normally comprise in total not more than 10% by weight of the composition. Such optional constituents can comprise sensory modifiers, such as talc or finely divided polyethylene, such as in an amount of up to 5% by weight; fragrance, including, if desired deoperfumes, often in an amount of up to 4%, eg 0.3 to 2% by weight, colourants; skin cooling agents such as menthol; wash-off agents such as non-ionic surfactants.

The invention compositions can be made by the skilled man using methods known in the antiperspirant industry or described in published literature for the preparation of antiperspirant roll on, squeeze or pump spray cream or soft solid or firm stick compositions. Likewise, the invention compositions can be dispensed using the appropriate dispensers for such antiperspirant roll on, squeeze or pump spray cream or soft solid or firm stick compositions as have been employed or described in published literature.



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In the second aspect of the present invention, antiperspirant compositions described herein in the first aspect, can be employed in conjunction with a hair removal regime to pre-condition, or ameliorate and/or repair skin damage caused by hair removal, such as irritation and impaired skin condition.

The second aspect of the invention applies to the various methods hair removal, such as shaving and use of depilators, and is demonstrated especially in regard to wet shaving techniques, ie techniques in which an area of skin from which hair removal is sought is first contacted with water and a shaving composition containing at least one surfactant, commonly a soap or mixture of soaps or other anionic surfactant, and usually with various other constituents, and thereafter a sharp blade or series of blades, usually retained in a holder, is pressed against and passed across the skin surface to cut through hair follicles close to their base.

Most people who remove hair from their axillae, do so either regularly or for special occasions. If they do so regularly, then it is important that a cosmetic antiperspirant continues to enable the skin to resist the repeated challenges from shaving or other methods of hair removal. On the other hand, if the user depilates only intermittently, then its localised impact on the skin tends to be greater. Thus, it is particularly important that the antiperspirant formulation aids recovery.

In accordance with this second aspect, in some regimes, users employ a cycle in which

- i) an antiperspirant composition is applied to skin in a chosen region of the body, and in particular an axilla,
- 5 ii) is left in place whilst the user carries out her desired activities, controlling the local appearance of sweat on the skin,
- iii) optionally said skin is washed
- iv) a shaving composition is applied to said skin and a  
10 sharp blade is pressed at an acute angle against and passed across said skin
- v) optionally, the skin is rinsed and dried and
- vi) steps i) and ii) are repeated.

- 15 For persons who remove hair regularly, steps i) and ii) often occur from 1 to 14 times and particularly from 1 to 7 times, between each occurrence of step iv). Commonly antiperspirant formulation is applied at least once a day, sometimes twice, and less commonly 3 or 4 times. Hair  
20 removal, for example by shaving, is carried out weekly by many, two or three times a week by others and daily or most days by some.

- Step vi) often takes place shortly after step iv, for  
25 example within 30 minutes and in many instances within 10 minutes. It is an advantage of the instant antiperspirant formulations which contain the combination of both glycerol and glyceride oils that they can be used so soon after shaving, and that by so doing they can start to counter the  
30 irritation and other detrimental skin effects prompted by shaving.

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In a further aspect of the invention, there is provided a first kit of parts, comprising a) a shaving composition comprising at least one soap and alternatively or additionally an other anionic surfactant salt, for use in conjunction with a razor and b) an antiperspirant composition according to the first aspect. The kit may further comprise instructions, either on the respective containers of the compositions or on a container for the kit or an instruction leaflet incorporated therewith or affixed thereto, on how to use the shaving composition and the antiperspirant composition, though in practice, such use instructions may be assumed by the intended user in view of their expected previous practice in shaving and applying antiperspirant. In a second kit of parts, the constituents of the first kit are supplemented by a razor.

Selected embodiments of the present invention will now be described more fully by way of example only.

The Examples hereinbelow employ as a representative natural oil, sunflower oil. Invention compositions can be made similarly by substituting maize corn oil, evening primrose oil or borage seed oil therefor.

Examples 1 to 3

In these Examples, the benefits of employing an antiperspirant composition in accordance with the present invention together with a hair-removal regime are demonstrated using representative roll-on formulations which comprised:-

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Table 1

Constituent	% by weight
aluminium chlorohydrate in 50% w/w aqueous solution	17.5
POE steareth emulsifier (mixture of from 2 to 100 POE units, average ~5.4)	3.2
Glycerol	4.0
Sunflower oil (weight ratio of oleic to linoleic residue of ~2:1)	4.0
Fragrance	1.0
Water (total)	70.3

Table 2

Constituent	% by weight
aluminium chlorohydrate in 50% w/w aqueous solution	17.5
Ceteareth 20	3.0
Cetyl alcohol/Glyceryl stearate/decyl oleate	5.0
Fragrance	1.2
Water (total)	73.3

- 5 The compositions described in Tables 1 and 2 were made by a conventional method known in the art for making an aqueous roll-on formulation.
- In Example 1, a panel of 30 healthy female volunteers aged between 18 and 55 was recruited carried out the following
- 10 protocol in 2002 in England:-
- In the first week, the volunteers shaved their underarms once a day using Wilkinson Sword Extra Precision™

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disposable razor the skin having been moistened with a topical application of a Lux<sup>TM</sup> soap bar. Antiperspirant was applied topically, firstly shortly after shaving was completed and the armpits rinsed, and on a further 3 times  
5 at intervals during the day, using a composition not according to the present invention, Secret Clear Dry Stick<sup>TM</sup>.

During the following four weeks, panellists shaved their armpits in the same way, but twice a week and applied a  
10 test antiperspirant roll-on solution in Table 1 or a comparative antiperspirant roll-on solution in Table 2 to respectively either the left or the right armpit four times daily, at regular intervals, half applying the test solution to the left armpit and half to the right. The panellists  
15 avoided washing their armpits for 2 hours after applying the antiperspirant, and did not employ any other washing product on the underarms during the test.

During the test period, panellists were visually assessed on  
20 Mondays, Wednesdays and Fridays by a trained, expert assessor. In addition, the panellists kept a diary to record any incidents of itch, sting, burn or any other irritable under-arm sensation that they perceived, either on application of the antiperspirant composition or  
25 subsequently and at the end of the test completed a questionnaire. Various sensory criteria were assessed in that way, to indicate whether the skin was perceived to be soft, smooth, comfortable or healthy, using a 5 point scale, in which 1 was best and 5 was worst.

Positive attributes		Negative attributes
extremely	1	not at all
very	2	slightly
moderately	3	moderately
slightly	4	very
not at all	5	extremely

The benefits of the invention composition can be seen from the data below:-

5

Cumulative score of visible occurrences of visible irritation - Table 3

Days into test	Score	
	Invention	Comparison
5	3	4
8	4	5
12	5	7
15	5.5	8
19	6	9.5
22	7	11
26	8	13
30	8	14

10 From Table 3, it can be seen that the invention composition provoked significantly fewer occurrences of visible irritation demonstrating that it was kinder to the skin in a shaving regime that is employed by a substantial fraction of persons who remove hair from their armpits.

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From their self-assessments, the panellists indicated that use of the invention composition was consistently superior to the comparison composition on the attributes recorded, including, soft, smooth supple, comfortable. healthy  
5 irritated and sore, within the range of 0.25 to 0.4, in each case at a confidence level of greater than 95%. Thus confirms the value of employing the invention composition in combination with a shaving regime.

10 The panellists also provided data to assess whether the compositions on applications sting the user. The cumulative number of event recorded were summed for each composition. After 29 days, the comparative score for the comparative composition was just over 1.5, whereas the score for the  
15 invention composition was only 0.4, which is over 3 times better.

#### Example 2

In this Example, the test was repeated, but in the week  
20 before the comparative test, the user employed the same comparative roll-on composition as in the test period. This second comparison was a differently fragranced variant of the comparison roll on composition used in Example 1. The invention composition in this Example was the same as that  
25 in Example 1, except for using nominally the same emulsifier system from a different supplier. The Similar results to the results shown above were obtained, but in addition, the trained assessor also measured on the Monday, Wednesday, Friday assessments, the extent of hydration of the stratum  
30 corneum in a conventional manner using a Corneometer. The difference in hydration approximately 0.2 in 3.1/3.3 was

statistically significant at the 95% confidence limit, in favour of the invention composition. This confirms that the invention composition was repairing the stratum corneum faster than the comparison composition.

5

Example 3

In this Example, the tests were repeated employing the invention composition of Example 2 and as comparison a competitor's commercial roll-on product analysing

10 Water, aluminium chlorohydrate; PPG-15 stearyl ether; Steareth 2; Steareth-21; Parfum; PEG-8; Trisodium-EDTA; Glyceryl laurate; Persae Gratissima; Citric acid; Octyl dodecanol.

15 The invention composition recorded a lower visible irritation score which became significant from about day 8 till the end of the study on day 29. Since the application of antiperspirant and armpit hair removal are activities which are continued for many years, data obtained at the end  
20 of the study is more pertinent. In the self-assessment tests, the invention product was superior to that of the comparison in all the attributes, and statistically significant at the 95% confidence limit or better for softness, comfort, and irritation.



Example 4

A representative pump spray composition.

5

Table 4

Constituent	% by weight
Al-Zr Pentachloro-hydrate (40%)	50.00
Distilled Water	31.45
Cyclomethicone D5	4.0
Glycerol	4.0
Sunflower Oil	4.0
Glyceryl Stearate, Ceteareth-20, Ceteareth-12, Cetearyl Alcohol, Cetyl Palmitate	2.0
Amphoteric Potato Starch	1.0
Perfume	1.0
Glyceryl stearate	1.0
Cetearyl Alcohol, PEG 20 Stearate	0.65
Ceteareth 20	0.4
Octyldodecanol	0.5

Example 5

This Example describes a representative stick composition.

Table 5

Constituent	% by weight
Cyclomethicone D5	36.5
AZAG*	24.0
nonvolatile silicone 10 mPa.s	7.5
PPG-14 butyl ether	6.0
Stearyl alcohol	14.5
polyethylene powder	3.0
Castor wax	2.0
Talc	2.0
Glycerol*	2.0
Sunflower oil	1.0
Fragrance	0.8
Steareth 100	0.7

Ingredients marked \* in these Examples were combined in a  
5 prior preparative stage before the remainder of the  
constituents were brought together.

Example 6

Representative aerosol formulation

Table 5

Constituent of base composition	% by weight
Particulate Activated aluminium chlorohydrate*	39.0
cyclomethicone D5	20.8
PPG-14 butyl ether	22.8
Fragrance	5.4
Hydrophobic clay	4.2
Sunflower oil	4.0
Glycerol*	2.0
Octyldocecanol	1.0
Dimethicone copolyol	0.8

- 5 To make the final aerosol composition, 1 part by weight of base composition was introduced into an aerosol canister followed by 3 parts by weight of a propellant comprising a mixture of propane, butane and isobutane.

Example 7

## Representative Soft Solid Formulation

Table 6

Constituent	% by weight
cyclomethicone D5	40.7
Particulate AZAG*	24.5
PPG-14 butyl ether	10.5
Castor wax	6.0
low melting point wax	6.0
Talc	6.0
Sunflower oil	2.0
Glycerol*	2.0
Silica	1.5
Fragrance	0.8

5 Example 8

## Representative gel composition

Table 7

Constituent	% by weight
Propylene glycol	45.5
Al-Zr chlorohydrate glycine complex	25.0
Dipropylene glycol	11.0
Isostearyl alcohol	11.0
Dibenzoyl sorbitol	3.0
Glycerol	2.0
Sunflower oil	2.0
3-amino-1-propanol	0.5

## Claims

1. An antiperspirant or deodorant composition suitable for topical application to skin and providing a skin-care benefit which comprises:-
  - a) an antiperspirant active in an amount of from 1 to 50 by weight,
  - b) a natural oil that comprises a glyceride of an unsaturated carboxylic acid containing 18 carbon atoms
  - c) glycerolconstituents b) and c) being selected in a weight ratio of from 2:1 to 1:4 and together constituting 1.5 to 15% by weight of the composition and a carrier fluid for the antiperspirant active other than constituents b) and c) which is free from a low molecular weight aliphatic monohydric alcohol in an amount of from 30 to 93% by weight.
2. A composition according to claim 1 in which the glyceride in the natural oil comprises a carboxylic acid residue from a unsaturated carboxylic acid containing 1, 2 or 3 olefinic bonds.
3. A composition according to claim 2 in which the carboxylic acid residue is derived from oleic, linoleic, linolenic or recinoleic acid.
4. A composition according to claim 2 in which the carboxylic acid residue is derived from petroselinic acid, 7-octadecenoic acid, parinaric acid, pinolenic acid, punicic acid and stearidonic acid.

5. A composition according to claim 2 in which the natural oil comprises at least one oil selected from coriander seed oil, borage seed oil, evening primrose oil, maize corn oil, sunflower oil and safflower oil.  
5
6. A composition according to claim 5 in which the natural oil comprises sunflower oil.
- 10 7. A composition according to claim 6 in which the sunflower oil contains rich in oleic acid residues compared with linoleic acid residues.
- 15 8. A composition according to claim 6 in which the sunflower oil contains rich in linoleic acid residues compared with oleic acid residues.
- 20 9. A composition according to any preceding claim in which the weight proportion of glyceride-containing natural oil is in the range of 0.3 to 10%, in the composition excluding any propellant.
- 25 10. A composition according to claim 9 in which the weight proportion of glyceride-containing natural oil is in the range of 0.5 to 6%, in the composition excluding any propellant.
- 30 11. A composition according to any preceding claim in which the weight proportion of glycerol in the composition, excluding any propellant, is from 0.5 to 10%.

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12. A composition according to claim 11 in which the weight proportion of glycerol in the composition, excluding any propellant, is from 0.5 to 6%.

5 13. A composition according to any preceding claim in which the combined weight of glycerol and glyceride-containing natural oil is from 2 to 8%, in the composition excluding any propellant.

10 14. A composition according to any preceding claim in which the weight ratio of the natural oil to the glycerol is at least 1:1.

15 15. A composition according to claim 14 in which the weight ratio of natural oil to glycerol is no greater than 2:1.

20 16. A composition according to any preceding claim in which the antiperspirant active salt is present at a concentration of from 15 to 30% by weight in a composition that is free from propellant.

25 17. A composition according to any one of claims 1 to 15 in which the antiperspirant active salt is selected from aluminium chlorohydrate and activated aluminium chlorohydrate at a concentration of from 10 to 50% in a base composition intended for mixture with a propellant.

18. A composition according to any preceding claim in which the carrier fluid comprises water.

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19. A composition according to any preceding claim in which the water comprises from 50 to 75% by weight of the composition.
- 5 20. A composition according to either one of claims 18 or 19 employing an aqueous solution of aluminium chlorohydrate, zirconium aluminium chlorohydrate or zirconium aluminium chlorohydrate glycine complex.
- 10 21. A composition according to any of claims 18 to 20 in which the water or aqueous solution is thickened with a non-ionic surfactant.
- 15 22. A composition according to any of claims 1 to 17 in which the carrier liquid comprises a water-immiscible oil as a continuous phase.
- 20 23. A composition according to claim 22 in which the water-immiscible oil comprises a volatile silicone oil and optionally contains one or more non-volatile oils selected non-volatile silicone oils, polyalkylene glycol ethers and alkyl benzoate esters.
- 25 24. A composition according to claim 22 or 23 in which the water-immiscible oil phase is present in an amount of from 30 to 65% by weight.
- 30 25. A composition according to any of claims 22 to 24 in which the water-immiscible phase is thickened with a particulate inorganic thickener in an amount of from 0.5 to 4% by weight.



26. A composition according to any of claims 22 to 24 in which the water-immiscible phase is thickened or solidified with an organic gellant or structurant in an amount of from 1 30% by weight.
27. A composition according to claim 26 in which the organic gellant or structurant is selected from waxes.
28. A composition according to claim 27 in which the wax comprises a fatty alcohol.
29. A composition according to any of claims 1 to 17 in which the carrier comprises propylene glycol and/or dipropylene glycol.
30. A composition according to claim 29 in which the carrier is gelled by dibenzylidene sorbitol.
31. A cosmetic method for aiding the recovery of human skin from side effects of hair removal whilst controlling perspiration or conditioning the skin to ameliorate such side effect comprising
- a) applying topically to the skin a composition according to any one of claims 1 to 30 before and/or after hair removal from the skin.
32. A process according to claim 31 employing a cycle in which

- i) an antiperspirant composition is applied to skin in a chosen region of the body, and in particular an axilla,
- 5 ii) is left in place whilst the user carries out her desired activities, controlling the local appearance of sweat on the skin,
- iii) optionally said skin is washed
- iv) a shaving composition is applied to said skin and a sharp blade is pressed at an acute angle against and  
10 passed across said skin
- v) optionally, the skin is rinsed and dried and
- vi) steps i) and ii) are repeated.

15 33. A process according to claim 32 in which steps i) and ii) are carried out from 1 to 7 times between occurrences of step iv).

20 34. A kit of parts comprising a) a shaving composition comprising at least one soap and alternatively or additionally an other anionic surfactant salt, for use in conjunction with a razor and b) an antiperspirant composition according to any one of claims 1 to 30.

35. A kit of parts according to claim 34 additionally comprising a razor.

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Abstract

Cosmetic Method and Composition for enhancing Attractiveness

5 Hair removal, especially from armpits damages skin, for  
example by irritating it, and this can be exacerbated by the  
application of antiperspirants to control body odour  
generation. In the present invention, the deleterious  
effects of hair removal, eg shaving, and antiperspirancy can  
10 be ameliorated by employing antiperspirant compositions  
containing a natural oil and glycerol to a combined  
concentration of from 1.5 to 15% by weight and in a weight  
ration of from 2:1 to 1:4.

15

